CHOICES OF WILDERNESS ENVIRONMENTS--

DIFFERENCES BETWEEN REAL AND HYPOTHETICAL CHOICE SITUATIONS

Jean T. Beaulieu and Richard Schreyer

ABSTRACT: Factors considered most critical in selecting a specific wilderness environment in which to recreate are likely to vary depending upon the type of environment involved, the range and extent of experience of the recreationists, and the situational context of the decision (whether a real or a hypothetical decision was made). This study examines differences in factors considered in choosing a wilderness environment based upon whether the choice was an actual report of behavior or a hypothetical decision. A questionnaire requesting information concerning choices of wilderness areas in which to participate was administered to two groups. A sample of 325 recreationists were contacted on-site in wilderness areas in Utah and Wyoming and asked to report on why they had actually chosen that area. The second sample was a mail survey of Utah Wilderness Association members, and requested a hypothetical decision concerning a place in which to recreate and the factors used to make that decision. Responses were analyzed for the two sets in terms of the most important factor cited in making the choice, the degree of specificity of the most important factor, the total number of factors considered important in making the choice, and the combination of attributes considered important. In all cases, significant differences were noted.

THE USER/ENVIRONMENT INTERFACE

As the focus on wilderness moves from designation to management, there is a growing need for more accurate information concerning user relationships with the resource. One important concern is identifying which aspects of wilderness environments have the greatest influence on recreation choice behavior. This topic focuses on why certain areas are chosen, which trails are selected, what areas are perceived as desirable for camping, and what behaviors are seen as appropriate.

Actual attempts to carry out research on the topic have been fraught with difficulties concerning the measurement of attributes and the link of reported significance to actual behavior. This paper reports one approach to assessing the environmental attributes which affect choice behavior, comparing potential differences between persons sampled in the wilderness environment itself and those who are sampled at home.

Attributes and Wilderness Management

Rather than being a trivial academic pursuit, this line of research has distinct implications for recreation resource management and planning. Knowledge of such relationships can assist management through identifying which criteria are most relevant for inventorying the resource. Further, it would be possible to target which types of information are most important in affecting recreationists' behaviors. To the extent that management may desire to affect that behavior, either to minimize impact on the resource or to enhance the experience for the visitor, such inputs will be critical to designing effective information systems.

The need for this type of information is augmented by the fact that the Recreation Opportunity Spectrum (Driver and Brown 1979; Clark and Stankey 1978) is currently the primary recreation planning tool used by the Forest Service and the Bureau of Land Management. It is based on the assumption that recreation experiences are dependent upon specific attributes of the recreation environment chosen by the recreationist. Therefore, environments are to be inventoried according to the types of experiences they can provide. A goal of recreation resource management using this model is to help recreationists match desired outcomes with settings that will maximize the probability of their attainment.

The ROS catalogs all lands into six different classes of recreation opportunity, from primitive wildlands to organized urban recreation. Designation is based on a complex list of attributes and weighting factors. A map of the entire management unit can be created showing the classification of each area, allowing the recreationist to pick his/her own desired mix of opportunities.

This classification scheme has been based almost entirely on measurement of physical characteristics, though many of the physical criteria do

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Jean T. Beaulieu is a Doctoral Candidate, Department of Forest Resources, Utah State University, Logan, UT. Richard Schreyer is Associate Professor of Recreation Resource Behavior, Utah State University, Logan, UT.

have obvious social or psychological aspects (e.g. remoteness). The Forest Service's ROS manual contains almost 15 pages delineating the physical requirements for classification, and less than one page apiece for social and managerial factors. This causes ROS to be primarily a physical inventory procedure that provides practitioners with little direct information concerning the recreationists' perceptions of the ability of the land to provide desired experiences.

In order for such a planning system to operate effectively, it must be able to determine: 1) which attributes of the environment are important for the production of a quality recreation experience, 2) what specific aspects of the environment affect recreation behavior, 3) what aspects of the same environment are sought by recreationists desiring different experiences, and 4) how the diversity among users can be more effectively characterized.

With this information the manager may be able to formulate the most practical method for providing recreation opportunities that realistically allow his/her clientele to increase the benefits obtained from the recreation experience while protecting the character of the resource. One approach to gathering this information and understanding the influence of environments on behavior is to study the way people cognitively organize information about environments. This suggests an examination of the types of information used to classify and understand natural environments, and the way in which that information varies across different types of users. In other words, we believe the best way to approach the link between environment and behavior is to study the way that link is made in the mind of the user. We have approached this through the analysis of environmental images.

The Image of the Environment

Psychologists studying cognition do not know what specific processes are involved in image formation, though it is a simple activity for most persons. For example, a subject can be asked to imagine a wildland campsite, and the task is readily accomplished. Images consist of many constituent fragments that combine to form the individual's conception of a given environment. There is an interactive process between mind and environment which suggests that "images are not static pictures but are processes that begin and end with varying existence" (Bugelski 1971:35). There is an element of creative construction involved in that attributes presently recorded by the senses often stimulate the mind to remember other attributes that past experience indicates should be correlated. This creates a composite image uniting observed and imputed characteristics (Bunting and Guelke 1979).

The image of wilderness is not created simply by observation of the physical environment, since it is also contained within a psychological realm, symbolizing many internal meanings and needs. When discussing the image of an environment it must be remembered that it will be experienced as a unified field, no matter how many attributes must be mentally added to complete the image. This internal representation will not be an exact depiction of what others perceive to be out there. The image will be distorted by the perceiver's own set of wants, purposes, preferred attributes, and symbolic values. These will be strongly influenced by the definitions of place meaning and value espoused within the individual's culture. This should particularly encourage researchers looking for attribute/behavior links to broaden their studies to include other dimensions of attributes besides the physical (Moore 1979).

It is important to note that the concept of environmental image carries with it some conception of appropriate behaviors. "Designers and architects have long known that the form and appearance of a building influences certain behaviors that take place within it" (Ittelson and others 1974:1). This aspect of environment, its influence over behavior, is of great importance when wildland recreation places are considered, as it suggests that the meanings assigned to such places are likely keyed to the uses we make of them. Thus, the attributes we use to construct our mental images should be tied to behavior.

We assume recreationists use some form of categorization process for keeping images organized when they are involved in recreation planning. For example, if a recreationist feels like going fishing, he/she mentally runs through a list of places where fishing is allowed and then selects a particular place. Each recreation activity may have many subcategories (e.g. fly fishing vs. bass fishing, places where the rest of the family can have fun while I fish).

The question remains as to how images of environments may best be measured. We have taken the approach of using open-ended responses from recreationists. Bugelski noted (1971) that reports of images are still only reports, not images. Since no one has discovered where images reside, or any physical trace of an image, researchers dealing with images must be prepared to have them shift and change quite readily. This changing of cognitive representations probably is not a serious problem, as many attributes of a desired recreation experience will likely remain constant. Once again, there are only so many elements which will contribute to participation in certain activities; however, the relative emphasis on these may change.

Cognitive Sets and Behavior

A helpful way to organize the variability in images is to think in terms of a "cognitive set." A cognitive set is "a plan to select

specific types of data for processing or to perform specific mental operations on information being processed" (Leff and others 1974:396). Cognitive sets are useful in that they 1) cause the respondent to give priority to specific types of attributes, and 2) assume that the various constructs are interrelated with associated meanings. Thus, when a person thinks of an area, a generalized category for that type of area is accessed in the mind, which should result in the generation of specific types of attributes.

When a person visits a wilderness area the observed behaviors are a physical manifestation of the outcome of an internal cognitive process. The recreationist made a choice and the choice was dependent on that person's past reinforcement history, or experience. This suggests a more or less consistent pattern of learned behaviors in particular types of environments, or "activity style." Such a pattern would likely generate a fairly consistent cognitive representation of any type of recreation engagement. The image generated would be continuously modified by information concerning new recreation places and activities, and by constraints on potential behaviors present in the environment.

While images are dynamic, they are nevertheless likely stable enough to be measured. Mack (1971) spoke of the basic conservatism that people display in regards to past successful decisions. It is psychologically easier to repeat an action that was previously successful than to attempt an untried action. As the pattern of behavior becomes more ingrained the range of choices becomes more restrictive, but as experiences are gained the number of known recreation places (that satisfy the basic requirements) should also increase.

Thus, one of the most important factors affecting choice behavior should be the amount and type of experience a person has had with the activity. The image of a recreation place would be much richer and more complex for someone who has experienced many different types of places. This richness suggests that while a person with more experience may be looking at the same environment, he/she may be seeing more detail. Thus, the attributes responded to may exist at a more detailed or specific level of organization.

If recreationists respond to attributes at differing levels of specificity, they may not react similarly to pre-set lists of attributes. This suggests that amount of experience should be used as a control variable in establishing relationships between environment and choice behavior. Further, the specificity of attributes considered (the level of organization most directly related to choice) should be examined as well as the type of attribute.

Assessing Choice Behavior

When recreationists begin to choose where they will engage in their next recreation experience they must begin by delineating the problem space and the task structure. Both of these are difficult for the researcher to discern, since these activities may be occurring subconsciously and all that can readily be observed are the outcomes (where the recreationist went), which are visible and unambiguous.

We believe the most accurate way to ascertain information on this step is through self-reporting by the user. The content of this self-report should be greatly influenced by the recreationist's activity style, which will specify the place and activity that the respondent will discuss and by the level of experience, which will affect the number and kind of attributes that will be readily accessible by the respondent.

One of the problems in decision research is how to present the problem in a totally naturalistic manner so that the problem has not already been decomposed into only a few dimensions. This decomposition might make the research design easier since it will help control the number of variables, but it may make the validity suspect. Most present research has the decision-maker being given a list of potential attributes, with the task of choosing among them (Phelps and Shantreau 1978; Slovic 1975). It is likely, however, that real world decisions are not made in this disjointed manner. In the real world the decision-maker has a great deal more influence over what type of decisions will be made and what type of information will be examined before the final choice. Thus, in order to gather realistic information, the subjects must be presented with a holistic representation of the pre-decision situation and be allowed to access whatever information is deemed relevant.

There are two ways such an analysis can proceed. First, persons actually visiting wilderness environments could be sampled. Such persons will have already screened information to make a choice, and the behavior will be real. A self-report in this situation would be most directly tied to the environment/behavior link. Such a methodology, however, is time consuming and expensive. As wilderness users tend to disperse themselves, the generation of a sufficient sample size to provide reliable results could be very costly.

A second approach would be to contact persons at home, through a mail questionnaire for instance, in order to generate large numbers of responses. Persons could be requested to make a hypothetical decision, based upon their previous experience, and the results would thus be tied to potential recreation choice behavior. The question, of course, is: How representative of real choices in the field are hypothetical choices of similar environments?

This paper reports a study that seeks to obtain open-ended responses concerning the attributes considered important in making choices for wildland recreation environments. Attributes are analyzed in terms of the most important

factor used to make a given choice, the degree of specificity of that factor, the total number of factors considered important to the choice, and the mix of attributes considered. Further, we make a comparison of two methodologies used to collect these data: real choices reported by recreationists in the field and hypothetical choices made by respondents answering a questionnaire at home.

METHODOLOGY

Study Instrument

The questionnaire used in the study was the end result of four pretests involving over 200 subjects. Two forms were used: one designed to be a mail-out questionnaire, and one designed to be administered on-site. In the mailed version, the wording reflected the fact that the choice of an environment being made was to be hypothetical. It requested an initial choice of a preference between a mountain or desert environment. To respondents residing in the Intermountain West opportunities for both are equally attainable. The questionnaire then asked respondents to choose where they would go for a three-day weekend. Potential limitations of money, time available, and access to transportation were removed from the decision process, so that preference for the environment would be the major consideration. In the case of the on-site questionnaire, respondents were asked why they had chosen the particular environment in which they were contacted.

Sample Populations

Two sets of respondents were used for the actual and hypothetical choice situations. The actual choice situation involved an on-site administration of the questionnaire to 324 wildland users. Areas sampled were both mountain and desert wildland environments in the Intermountain West. Persons on hiking/backpacking trips were approached at trailheads or campsites and asked to complete the questionnaire. All members of a given party were requested to complete the questionnaire. Success rate in questionnaire completion was 95 percent.

Areas sampled included both National Park Service and National Forest backcountry areas. For mountain environment, the High Uintas Primitive Area, the Bridger Wilderness Area (both USFS) and the backcountry of Grand Teton National Park were used. For the desert environment, Canyonlands National Park was used. Approximately two-thirds of the sample involved mountain environments.

The hypothetical choice situation required a sampling technique that was targeted toward known users of wildland environments. Even in the Intermountain West, the proportion of persons engaging in such recreational activities is relatively low. A general population sample would likely yield a very small response rate of actual participants.

In order to maximize the probability that the persons contacted would be participants, members of the Utah Wilderness Association were chosen as respondents. That organization made its mailing list available for the purpose of the study. While restriction of a sample to membership in one group could introduce bias into the survey, it was also a realistic aggregation of persons most likely to have a large amount of information concerning the actual use of these areas. Response rate to the questionnaire was 255, or 68.4 percent.

Independent Variables

Choice context and environmental context.--The two samples represented the real or the hypothetical choice situations. The environment chosen was also used as a control variable, as there might be significant differences in the attributes chosen depending upon whether a mountain or desert environment were selected. For the hypothetical group, their stated preference for mountain or desert was used. For the on-site group, the actual location of sampling was used.

Experience use history.--The amount of experience in this type of recreation was measured through a series of questions on previous participation. The dimensions used were length of time participating in wildland recreation, the average number of visits per year to such areas, and the total number of areas visited. Responses to each variable were standardized, and a composite value was assigned to each person. This overall value was divided by thirds, so that the group represented low, medium, and high experience values.

Dependent Variables

Most important factor.--Respondents were requested, after having made their choice, to list the most important factor in making that choice. The range of response was reduced to a more manageable list by a coding process developed through a pretest of a similar question. Fifty-four students in three classes at Utah State University generated 163 different attributes in making a similar choice. These attributes were sorted in a panel procedure into twelve different classification groups.

In order to allow for multivariate analysis, these twelve were ultimately reduced to four general categories. Attributes related to specific activity participation were labeled Activity Attributes. Physical Attributes were developed from categories previously labeled as Landscape Characteristics and Landscape Character. Psychological Benefits and Social Benefits were combined into a category called Social/Psychological Attributes. Finally, a category called Managerial Attributes was created out of those labeled Restrictions, Developed Areas, Access, Size and Management Setting.

Specificity.--The rating of specificity was also developed in the pretest. Once the four categories had been established, the attributes listed under each category were rated by a panel as to the degree of specificity of the label. The rating was made in reference to all other attributes, so the frame of reference was comparative as opposed to absolute. Four categories ranging from most to least specific were pre-determined, again allowing a basis for comparison.

Number of attributes.--After the most important attribute in the decision had been identified, respondents were asked to list any other factors which were important in the choice of the target environment. This was presented in an open-ended format so that the limit was set by the respondent. The total number of attributes listed was registered.

Mix of attributes.--Recognizing that the total set of attributes listed would range across several or all of the categories, a variable was created to represent the overall pattern of response. A decision rule was established that one of the four categories of attributes would only be considered if the number of attributes in that category mentioned made 15 percent of the total number of responses. Otherwise, the amount of detail would be virtually meaningless.

This process led to the development of fifteen different combinations of attributes. In order to reduce this number to a manageable level for purposes of comparison, groups were clustered based on similarity. It was noted that each group not containing a Physical Attribute comprised less than 4 percent of the total responses. Only three gorups containing a Physical Attribute comprised less than 4 percent of the total. Thus, all groups not containing a Physical Attribute were consolidated, and the three groups including the physical component with less than 4 percent response were eliminated. This left a total of seven combinations. The most common grouping was of Physical and Social-Psychological attributes, which represented 19 percent of the total sample. Next was the non-Physical class, which was a combination of all attribute classes naming no specific physical attributes, representing 17 percent of the responses. Next was the response mix of Physical/Managerial/Social-Psychological attributes (14 percent). The category containing only Physical Attributes comprised 13 percent of responses, followed by the Physical/Activity/Social-Psychological mix (12 percent) and the Physical/Managerial mix (10 percent).

RESULTS

Most important factor.--The most important factor was categorized according to the four major classes of attributes. A contingency table was generated for the comparison of real vs. hypothetical choice on the attribute selected as most important. Two analyses were performed, controlling for mountain vs. desert environment. No control was made for amount of experience, as a previous analysis showed that there were no significant relationships between experience and the dependent variable.

Tables 1 and 2 show the results of these analyses. For the mountain environment, the X^2

Table 1.--Results of the crosstabulation of kind of attribute considered the most important factor in the current decision on place to recreate. This contingency table was generated for respondents in the mountain environment

Kind of attribute	Decision context: Actual No. (%)	Hypothetical No. (%)	Total No. (%)
Physical	54(25)	36(26)	90(25)
Managerial	33(15)	34(24)	67(19)
Activity	36(17)	3(2)	39(11)
S-psych	93(43)	67(48)	160(45)
Chi square = 20.47	3 degrees of freedom		Significance = .0001
N = 356			

Table 2.--Results of the crosstabulation of kind of attribute considered the most important factor in the current decision on place to recreate. This contingency table was generated for respondents in the desert environment

Kind of attribute	Decision context: Actual No. (%)	Hypothetical No. (%)	Total No. (%)
Physical	32(31)	34(32)	66(29)
Managerial	19(18)	12(11)	31(14)
Activity	17(16)	9(8)	26(11)
S-psych	36(35)	61(49)	106(46)
Chi square = 13.57	3 degrees of freedom		Significance = .004
N = 230			

was 20.47 with $p<.0001$ while in the desert environment, the X^2 was 13.57 with $p<.004$. In the mountain environment, major differences appear to be a tendency on the part of persons in the hypothetical context to mention managerial attributes more frequently, with a slight tendency to mention social-psychological attributes more frequently. Persons in the actual decision context mention activity attributes much more frequently, while physical attributes are mentioned about evenly.

In the desert environment, the equality in the tendency to mention physical attributes is maintained, as is the tendency for persons in the actual decision context to mention activity attributes. The situation, however, with managerial attributes is reversed, as persons in the actual decision context mention these much more frequently, while the tendency for persons in the hypothetical mode to mention social-psychological attributes is increased.

Specificity of attribute.--The level of specificity was analyzed using a three-factor analysis of variance. The factors used were level of experience, environment (mountain vs. desert), and decison context. Table 3 shows the results of this analysis. While difference in environment failed to register a significant difference, both amount of experience ($F=3.4$, $p<0.04$) and decision context ($F=7.1$, $p<.01$) attained an acceptable level. In terms of actual numbers, persons in the hypothetical context had an average specificity of 2.3, while those in the actual context averaged 2.5, indicating a lower level of specificity.

Further, in both analyses, there was a two-way interaction between the decision context and the type of environment. Analysis of this interaction showed that persons in the desert context in the hypothetical situation picked attributes that were rated much more specific (2.1) than those in the real decision context (2.7). In the mountain environment, however, the difference was virtually non-existent.

Total number of attributes.--A three-factor analysis of variance was also performed on the total number of attributes mentioned as being important to the choice of a recreation environment. Results were significant ($F=71.7$; $p<.001$), as persons in the hypothetical decision context named more attributes (5.0) than those in the real context (3.4).

Attribute mix.--Tables 4 and 5 show the results for the analyses involving the mix of attributes compared by decision context, controlling for mountain and desert environments. In both cases, results were significant (mountain $X^2=30.1$, $p<.0001$; desert $X^2=30.0$, $p<.0001$). For both environments, there was a tendency for persons in the actual decision context to mention physical-managerial and non-physical attributes more frequently, and physical/social-psychological attributes less frequently.

Table 3.--Results of the hierarchically arranged analysis of variance examining the specificity of the most important factor in the current choice of a place to recreate

Source of variation	Sum of squares	DF	Mean square	F	Signif of F
Main effects	10.115	4	2.529	3.516	0.008
Experience	4.944	2	2.472	3.437	0.033
Decis. context (D.C.)	5.072	1	5.072	7.051	0.008
Envir. context (E.C.)	0.099	1	0.099	0.137	--
2-way interactions	18.405	5	3.681	5.118	0.000
Experi X D.C.	1.201	2	0.601	0.835	--
Experi X E.C.	1.621	2	0.811	1.127	--
D.C. X E.C.	12.378	1	12.378	17.209	0.000
Explained	30.565	11	2.779	3.863	--
Residual	414.313	576	0.719		
Total	444.878	587	0.758		

N = 588

Table 4.--Results of the crosstabulation of the attribute mix generated in the current choice of a place to recreate. This contingency table was generated for respondents who had chosen mountain environments

	Decision context		
	Actual	Hypothetical	Total
Attribute mix	No. (%)	No. (%)	No. (%)
Phys	14(8)	8(6)	22(7)
Phys/S-psych	23(13)	31(24)	54(17)
Phys/Mana/S-psych	18(10)	10(27)	52(17)
Phys/Act/S-psych	24(13)	13(10)	41(13)
Phys/Managerial	27(15)	8(6)	35(11)
Non-physical	75(41)	33(27)	108(37)

Chi square = 30.14 5 degrees of freedom Significance = .0000
N = 312

Table 5.--Results of the crosstabulation of the attribute mix generated in the current choice of a place to recreate. This contingency table was generated for respondents who had chosen desert environments

Attribute mix	Decision context: Actual No. (%)	Hypothetical No. (%)	Total No. (%)
Phys	2(2)	6(5)	8(4)
Phys/S-Psych	21(24)	35(29)	56(27)
Phys/Mana/S-psych	8(9)	30(25)	38(18)
Phys/Act/S-psych	7(9)	21(18)	28(14)
Phys/Managerial	16(18)	4(3)	3(10)
Non-physical	34(38)	24(20)	58(28)
Chi square = 29.95 N = 208	5 degrees of freedom		Significance = .0000

DISCUSSION

Sample Differences

There were differences across all dependent variables, depending upon whether the response format was a self-report of a real choice in the field or a hypothetical choice made at home. Several reasons may account for the differences. In the case of the total number of attributes listed, the fact that persons at home would list a greater number is certainly understandable, as they would have more time to reflect on possible choices.

The other differences are less straightforward. It is likely that many of the differences are a function of the nature of respondents in the two samples. The field survey interviewed persons in the backcountry, regardless of their philosophy or commitment to the resource. On the other hand, the mail survey contacted persons who were members of the Utah Wilderness Association, which implies both a philosophical and emotional commitment to such environments. Further, such persons may not actually be users of the resource, but may only support it for the knowledge value of its existence.

There were significant differences in the actual amount experience use history of the two groups. As might be expected, members of the Utah Wilderness Association were on average more experienced than persons contacted in the field. Forty-one percent of the hypothetical group were rated high in experience as opposed to 27 percent of the actual group. This increase, however, in experience was accounted for through hierarchical extraction in the analyses of variance. In other words, variance explainable by differences in amount of experience use history had been removed before the analysis on decision context was performed. In the case of the two Chi-square analyses, both were run only after it had been determined that experience did not have a significant influence on the results.

Beyond experience, however, is the intangible value/commitment factor. A person who is sufficiently interested in wilderness to join the Utah Wilderness Association may be prone to have read more material on such environments, and could likely pay attention to different types of environmental features. This could also imply a different pattern of motivation for participation, leading to differing demands upon the environment. It is not, however, entirely clear just how these differences specifically influence the results obtained.

Patterns of Response

Respondents in the hypothetical context in both environmental types were less likely to name activity attributes. It is possible such respondents would be less concerned about what they would specifically be doing than on-site respondents, for whom the actual activity was much more immediate. In contrast, respondents in the hypothetical mode tended to name more social-psychological attributes. Further, hypothetical respondents choosing mountains tended to name managerial attributes more often than those in real choice situations, while those choosing desert environments tended to name such attributes less often.

Deserts in the Intermountain West are primarily administered by the Bureau of Land Management, an agency not having many regulations concerning behavior. It is possible the hypothetical choices were geared more toward such environments, while respondents in the real choice situation were interviewed in a National Park, an environment with much more regulation. In the case of mountain environments, the implied presence of either Forest Service or Park Service administration might result in a higher level of concern for managerial control from the hypothetical choice population, while persons contacted in such environments may have experienced a successful trip without being hindered by regulations.

The disproportionate emphasis on social-psychological attributes was present in the analyses on attribute mix. It is possible that persons imagining such trips might tend to place greater emphasis on potential psychological benefits of participation such as escaping the routine and having solitude, while persons on-site

might be more concerned with the immediate activity. This was supported by the higher frequency of response for on-site respondents in the activity categories.

Persons in the hypothetical mode were considerably more specific in identifying attributes for desert environments than persons contacted on-site. This difference did not show up in relation to mountain environments. It is possible that the image of the desert is a much more variable construct than that of mountains. While one may assume that mountain ecosystems are more diverse than arid ones, the features of such environments may be more widely known, and persons from varying backgrounds may tend to report such images similarly.

Deserts, however, are much less known as environments, and there may be a greater range in the ways such environments are known. It is conceivable that Utah Wilderness Association members have a higher interest in this type of environment, and as mentioned, may have seen more literature concerning it. As a result, their images might contain more specific types of information. Whatever the explanation, these differences suggest that an exploration of the potential differences in image composition between different types of environments would be fruitful.

CONCLUSIONS

The differences in the response patterns for the two types of survey suggest that results from studies using either approach be limited in their generalization. Of most importance, mail-back studies completed by persons at home may not be very accurate indicators of preferences for real choices of recreation environments. This is of particular concern as recreation planners seek to gather public input for resource inventory purposes. While it may be easy to dismiss the differences reported here as being solely due to the different types of respondents, such an effect is not in and of itself proven.

There are pragmatic concerns which must also be addressed. A general survey of the public would have required a much more costly mailing to find an adequate sample of backcountry recreationists. Any mailing list of identified users would potentially introduce bias. For instance, it could have been possible to use addresses from backcountry permits issued by either the Forest Service or Park Service. This would, however, select for persons willing to use areas where permits are required assuming they were mandatory, or for persons willing to fill them out in places where they were voluntary.

While it is always easy to call for "further research," the results of this study provide support for the need to establish more systematically the nature and extent of these differences before the use of survey data can be generalized sufficiently to be incorporated into planning/management systems.

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